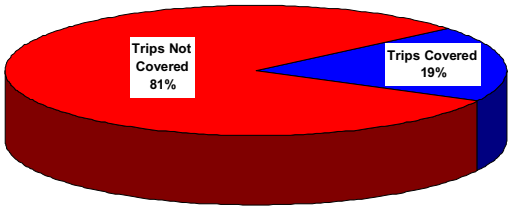
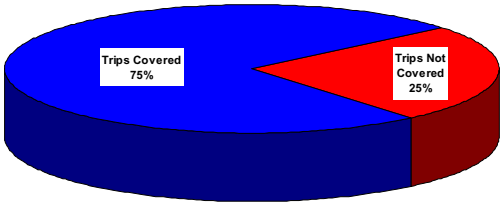
Methodological Improvements

Relative Sample Frame Coverage
Louisiana - Florida

MRFSS RDD Coastal Residential Household Sample Frame

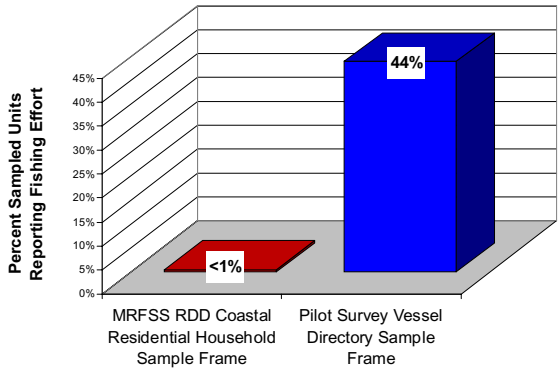


Vessel Directory Sample Frame



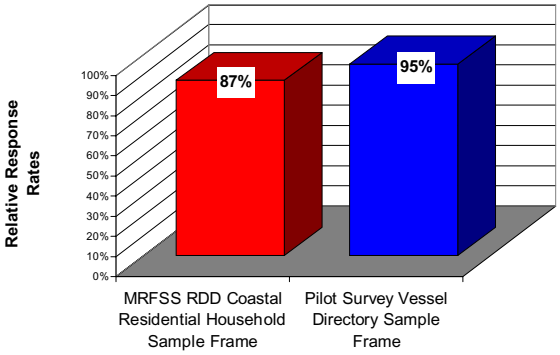
By sampling from a vessel directory, the pilot telephone survey covers approximately 75% of all Gulf charter angler trips, which more than triples the direct coverage of trips. This greatly reduces the percentage of trips accounted for by adjustment factors estimated by the MRFSS field intercept survey.

Survey Sampling Efficiency



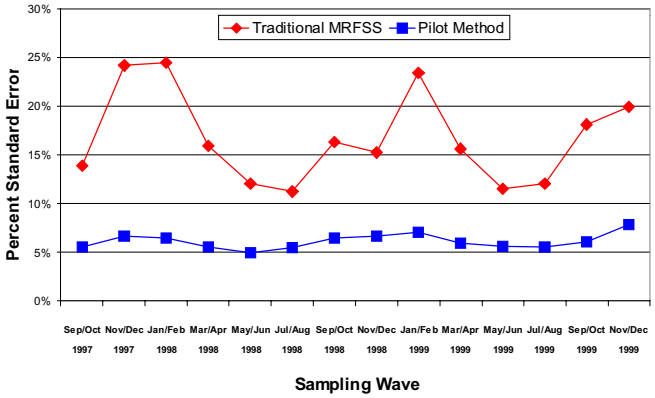
The Pilot survey increases sampling efficiency to over 44%. This increases the sample size for the charter vessel mode and improves statistical estimates.

Sample Frame Cooperation Rates



Thanks to the support of the Gulf charter vessel fleet, both the traditional MRFSS and the Pilot methodology enjoy a very high rate of cooperation.

Precision of Effort Estimates



Due to a good sampling frame, improved coverage, and efficient sampling, the Pilot method reduces the standard error by more than 50% across waves. More reliable and precise charter angler effort estimates improve our ability to monitor seasonal and annual trends for the charter vessel mode.

Terms & Definitions

Gulf *(Gulf of Mexico)* - For this study, the "Gulf" refers to the states from FL through LA (the MRFSS does not include TX).

RDD *(Random Digit Dialing)* - Random sampling of residential household phone numbers.

WAVE - A two-month sampling period (Jan-Feb = Wave 1)

AREA FISHED

INLAND WATERS - Inshore and brackish water bodies such as bays, estuaries, sounds, etc. (not including inland freshwater areas).

STS *(State Territorial Seas)* - Open ocean extending 0 to 3 miles from shore, except West Florida, Texas and Puerto Rico (10 miles).

EEZ *(Exclusive Economic Zone)* - Open ocean extending from the outer edge of the state territorial seas to 200 miles offshore.

Study to Improve Estimation of Charter Angler Effort

The Marine Recreational Fishery Statistics Survey (MRFSS)

by: Dave Van Voorhees, Ph.D. & Kirk Gillis (NMFS - F/ST1)

EXECUTIVE SUMMARY

THE NEED

The traditional MRFSS random-digit-dialing (RDD) telephone survey of coastal county households has been very effective for collecting fishing effort information from shore and private/rental boat anglers. However, it is less effective for collecting effort data from party and charter boat anglers for two reasons. First, the large majority of party and charter boat clientele do not reside within coastal counties. Consequently, large adjustments must be made to account for party/charter fishing by non-coastal residents. Second, less than 1% of coastal residential households surveyed actually report party/charter fishing activity. This makes it difficult to obtain adequate sample sizes for precise estimation. Because these problems can cause estimates to vary from year to year, they have been questioned by fishery managers and the party/charter boat fleet.

The MRFSS staff believed that state level for-hire vessel directories could be developed and used as sampling frames to improve the efficiency, precision, and credibility of MRFSS for-hire effort estimates. Initial investigation into the utility of vessel directories began in Maine in 1995 and then in North Carolina in 1996 and 1997. These studies produced promising results, and in 1997 the National Marine Fisheries Service (NMFS) funded testing of a vessel directory survey of charter boat angling at the regional level. This presentation summarizes important findings of the two-year pilot study in the Gulf of Mexico (west FL through LA). Results of the earlier studies are not presented here.

METHODOLOGY

The new methodology was developed by NMFS and tested through a state/federal effort involving the NMFS, Gulf States Marine Fisheries Commission (GSMFC), and the state agencies of Florida, Alabama, Mississippi, and Louisiana. The pilot study was planned and monitored by a team of representatives that included Captain Bob Zales II, a prominent member of the Gulf of Mexico charter boat industry. Charter boat directories were developed by NMFS and participating state agencies, and were maintained by the GSMFC. From September 1997 through the present, state personnel randomly dialed representatives of 10% of the charter boats for each state. The representatives (usually captains or owners) were asked about: 1) the number of chartered fishing trips in the previous week, 2) the number of paying anglers on each trip, 3) the primary area of fishing for each trip, 4) total hours spent actively fishing, and 5) type of fishing conducted. Self-reported telephone data were validated by an independent field survey of charter vessel activity.

PRINCIPAL RESULTS

It was concluded the vessel directory survey produced significantly more efficient, precise, and credible charter angler effort estimates than the traditional MRFSS method. This was primarily due to better coverage of Gulf charter angling activity, collecting the data from vessel representatives rather than their customers, and excellent cooperation rates from the charter fleet. Although there was no significant difference between the pilot study and traditional MRFSS annual Gulf and state level effort estimates, the new methodology shows higher charter angler effort in inland waters and lower charter angler effort in the exclusive economic zone (EEZ). The pilot study also indicates a significantly different seasonal distribution of charter angler effort, which the Gulf charter fleet considers more realistic.

IMPLICATIONS

The results have two important implications. First, the increase in the reliability of effort estimates improves our ability to monitor seasonal and annual trends for the charter boat mode. Second, the new methodology indicates significantly different distributions of charter angler effort among management areas and seasons in the Gulf of Mexico. This results in higher catch estimates for predominantly nearshore species and lower catch estimates for predominantly offshore species.

Participating agencies are pleased by the preliminary findings. The NMFS adopted the pilot survey as the new MRFSS charter method in the Gulf of Mexico starting in 2000 and hopes to implement it nationwide by 2001. To benchmark differences between the two surveys and preserve the historical time series, the NMFS will continue to conduct both the traditional MRFSS and the new survey side-by-side for another year.

The MRFSS Team

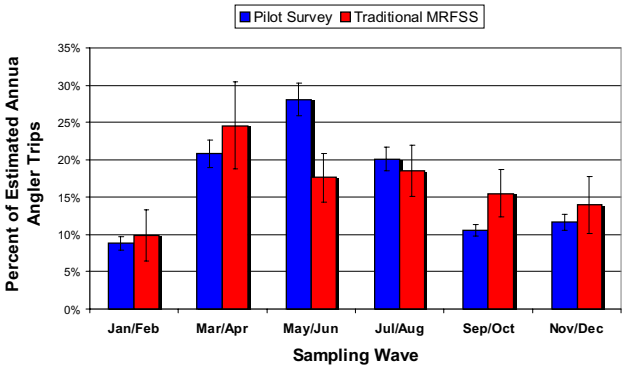
Team Leader - Maury F. Osborn

Statisticians - Dave Van Voorhees Ph.D., Alan Lowther Ph.D., & Tom Sminkey Ph.D.

Biologists - Terri Muller & Kirk Gillis

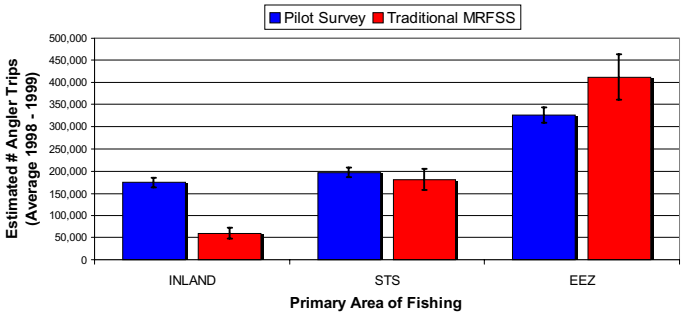
Estimation Improvements

Gulf Charter Boat Effort by Wave



There was no significant difference in the total annual estimate of charter fishing effort. However, the Pilot survey indicates a more realistic seasonal distribution of charter angler trips and improves the credibility of estimates among the Gulf charter fleet.

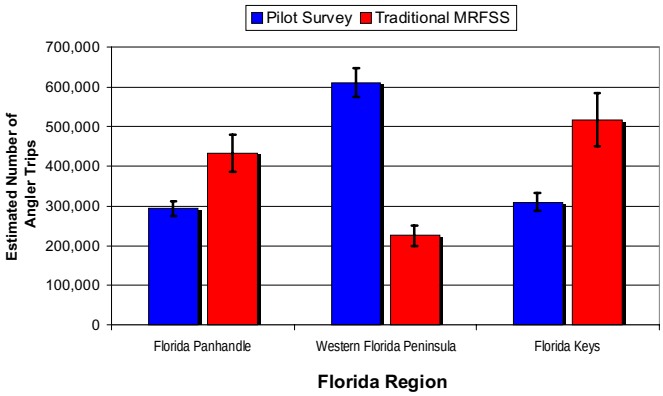
Charter Boat Effort by Area Fished



The Pilot study shows a significantly higher number of charter angler trips in inland areas and a significantly lower number of charter angler trips in the Exclusive Economic Zone.

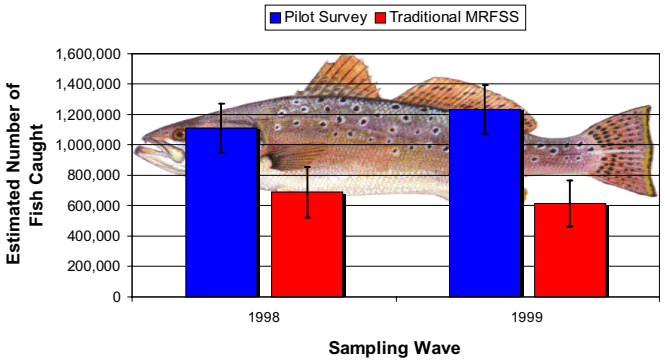
West Florida estimates have a tremendous impact on Gulf-wide charter effort estimation. Excluding Texas, over 77% of all Gulf charter angler trips originate from west Florida.

Charter Boat Effort by Florida Region

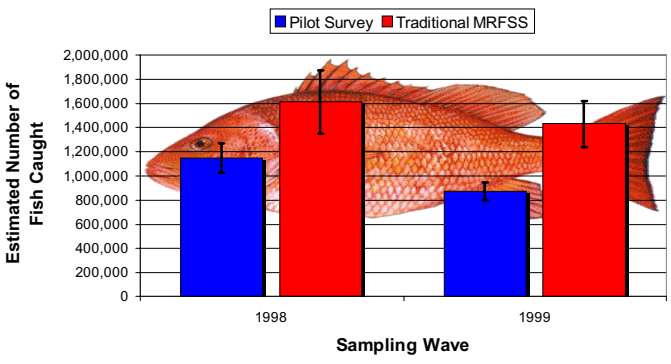


The traditional MRFSS under-represents the amount of charter angler trips in the Western Florida Peninsula region and over-represents the number of charter angler trips in the Panhandle and Keys regions. This partly explains differences in inland and EEZ estimates.

Spotted Seatrout Catch
Louisiana - Florida



Red Snapper Catch
Louisiana - Florida



Improvements to charter angler effort estimates affect Gulf catch estimates for the charter mode. Pilot study catch estimates are higher for species found predominantly in inland waters (such as spotted seatrout) and are lower for species found predominantly in the exclusive economic zone (such as red snapper).